Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

DATA SHEET 01 TO EU-TYPE EXAMINATION CERTIFICATE PTB 23 ATEX 3011 X

Manufacturer: Bauer Gear Motor GmbH
Eberhard-Bauer-Straße 37, 73734 Esslingen, Germany

for Three-phase asynchronous motors of types D..XC..06... (frame size 63 mm) for operation with frequency converters

Ratings

This certificate is valid for the following designs providing the motors of this type differ only negligibly from the sample tested as regards the electrical and thermal stresses:

Power up to:		0.69		kW
Voltage [1] up to:	100	400	500	V
Current up to:	8.0	2.0	1.6	A
Operating frequency range:		1 - 120		Hz
Pole pairs:		2, 4, 6, or 8		
Speed (motor) up to:		3600		min^{-1}
Operating mode:		S1, S9		
Thermal class:		155 (F)		

[1] Fundamental frequency, measured at the motor terminals.

In addition to the voltages specified above, values in between are also permissible. The associated currents must be converted in the reciprocal ratio of the voltages.

The voltage depends on the inverter input voltage, the voltage drop at the filter and across the motor connection cable and must not fall below the rated value specified on the motor rating plate at minimum inverter input voltage by more than 5 % in accordance with IEC 60034 - 1 range "A". This must be taken into account in the motor design, the inverter parameterization (e.g. V/f adjustment) and the minimum inverter input voltage.
The ambient temperature range is -20°C to +40°C and is specified on the motor rating plate.
If the use of motor connection cables with increased temperature resistance is required, this is indicated by an additional plate on the machine.
The manufacturer carries out type tests to ensure that all motor designs covered by this data sheet meet the requirements of the standard EN 60079-0:2018+AC:2020 and EN 60079-31:2014 for ignition protection type "tb" and do not exceed the maximum surface temperature specified on the rating plate in the range of 160°C...120°C, even at the maximum permissible ambient temperature. For this purpose, PTC thermistors with the following temperature monitoring assignment are installed in the stator winding of the motors:
Surface temperature 160°C to 140°C → PTC thermistor with a tripping temperature of 140°C
Surface temperature <140°C to 120°C → PTC thermistor with a tripping temperature of 120°C

The motors may only be used in the operating mode and under the environmental conditions which are stated on the nameplate and for which the motors were type tested by the manufacturer.

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Temperature monitoring

To prevent impermissible heating during inverter operation due to overload, the motors are connected by a device for direct temperature monitoring and monitored with specified inverter setting data. The device for direct temperature monitoring consists of three PTC thermistors DIN VDE V 0898-1-401 installed in the winding and a tripping device functionally tested for this purpose in accordance with Directive 2014/34/EU.

Frequency inverters used must meet the requirements of the data contained on the rating plate and the order confirmation. For the corresponding motor type, the maximum permissible torques are specified by the manufacturer as a function of the frequency with the corresponding rated currents.
The permissible data is also shown for each motor on an adhesive label in the operating instructions.

Converter settings

In conjunction with the above-mentioned monitoring device, the following inverter data must be set and maintained during operation:

Minimum clock frequency:	3	kHz
Current limit for a short time:	$1.6*I_N$	
Maximum overload time:	60	s
Minimum frequency f_{min}:	1	Hz
Maximum frequency f_{max}:	120	Hz
Permissible duration for operation below f_{min}:	60	s

The maximum overload time and the permissible duration for operation under f_{min} refer to a time interval of 10 min.

The torque as a function of the frequency results from the permissible frequency-dependent continuous current limit in the motor documentation.

All other setting data must be selected according to the requirements of the drive.

The maximum permissible pulse voltage must be limited to 1556 V (2 * √2 * 550V) at the motor terminals by selecting the appropriate inverter and/or using filters.
The maximum permissible inverter input voltage is 500 V +10%, 50/60 Hz.

Special conditions of use:

Group operation of the motors is not permitted.

Motors of this type may only be operated on inverters that meet the requirements specified above under "Inverter setting data".

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The rated current of the frequency inverter must not exceed twice the rated motor current.
The current monitoring of the frequency inverter must record the effective value of the machine current with a tolerance of ± 5 % in relation to the rated motor current.

Before commissioning, it must be ensured that no inverter-related overvoltages with a peak value of more than 1556 V can occur at the terminals of the electrical machine.

The motors must be labeled as follows:

II 2D Ex tb IIIC T120°C Db or
II 2D Ex tb IIIC T130°C Db or
II 2D Ex tb IIIC T140°C Db or
II 2D Ex tb IIIC T150°C Db or
II 2D Ex tb IIIC T160°C Db

Test report PTB Ex 24-33047

Konformitätsbewertungsstelle, Sektor Explosionsschutz
On behalf of PTB:

Braunschweig, October 29, 2024

Dr.-Ing. M. Thedens
Direktor und Professor

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